A Study on the Potential of Extraction of Roe Oil from *Thunnus albacares, Katsuwonus pelamis, Canthidermis maculata* and *Lepidocybium flavobrunneum*

D.S. Shanuke, A.C.W.W.M.C.L.K. Coswatte and S.C. Jayamanne

Department of Animal Science, Uva Wellassa University, Badulla, Sri Lanka

Fish oil contains essential polyunsaturated long chain fatty acids which are crucial for normal growth and survival of the fish. Food fish roe and fish waste contain oils in different levels. Even though roe of food fish has a lower demand in Sri Lanka, there is a potential of extracting edible fish roe oil and fatty acids. In this study, five different oil producing methods; heat and salt extraction, enzymatic hydrolysis, mechanical pressing and solvent extraction were tested with selected four fish species (*Thunnus albacares, Katsuwonus pelamis, Canthidermis maculata* and *Lepidocybium flavobrunneum*) to identify the best method and best fish roe type for edible roe oil production. Solvent extraction with 2-propanol was found to be the best method of producing roe oil considering oil yields (1.48±0.70 g: *T. albacares,* 1.33±0.10 g: *K. pelamis*, 1.27±0.25 g: *C. maculata* and 1.01±0.01 g: *F. flavobrunneum*). Hence, solvent extraction method was carried out for the selected matured roe of four species using four types of solvents: (50ml) 2-propanol, hexane, acetone and mixture of hexane and 2-propanol (70:30). Oil yields of roe in different maturation stages were (using 2-propanol) measured and compared. Highest oil yields were recorded by matured roe of (*K. pelamis*: 1.18±0.14 g, *T. albacares*: 1.03±0.32 g, *L. flavobrunneum*: 1.01±0.01 g and *C. maculata*: 0.94±0.52 g). Oil yields of immature roe in all four fish species were negligible. The results showed a significant difference between oil yields and solvents used for extraction ($P<0.05$). Highest oil yield was obtained (25 g of matured roe) as 1.60±0.26 g with acetone extraction for *T. albacares* followed by 2-propanol: hexane mixture, 2-propanol and hexane solvents were recorded oil yields of 1.43±0.89 g & 1.18±0.14 g for *K. pelamis* and 0.64±0.17 g for *T. albacares* respectively. It was revealed that roe of *T. albacares* is the most suitable for extraction of roe oil.

Keywords: Roe oil, Solvent extraction, Maturation